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UNITED STATES NAVY

MEDICAL NEWS LETTER

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Trends of Rheumatic Fever Incidence in the Navy

During recent years, the incidence of rheumatic fever and rheumatic heart disease has declined sharply among naval personnel. The extent of the rheumatic fever decrease is exemplified by comparing the 1958 incidence rate with that of 1952 (Figure 1). The decline in rheumatic heart disease, although not so dramatic, has been rather steady since 1955. Although total incidence of rheumatic heart disease is greater than rheumatic fever incidence, the reverse is true when only cases acquired during naval service are considered.

Many clinical and epidemiologic studies have pointed to a distinct relationship between streptococcal infections and rheumatic fever. Therefore, the incidence of streptococcal sore throat during recent years is worthy of note. From Figure 2 it can be seen that the reported incidence of streptococcal sore throat has been increasing, whereas there has been a decline in the reported incidence of rheumatic fever cases. These reverse incidence patterns are reasonably explained by an increasing attention given by Medical officers to diagnosis and treatment of streptococcal infections.

FIGURE 1.

RHEUMATIC FEVER AND

RHEUMATIC HEART DISEASE

1951-58

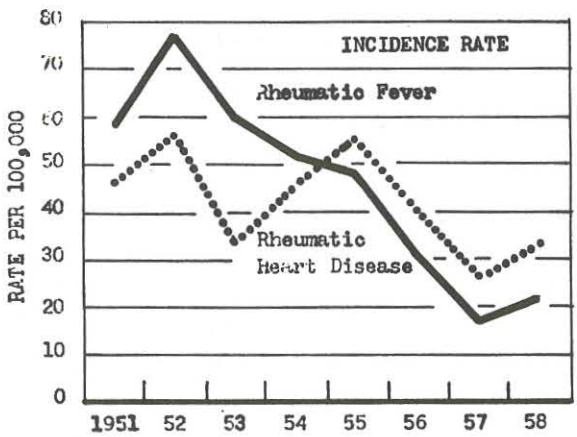
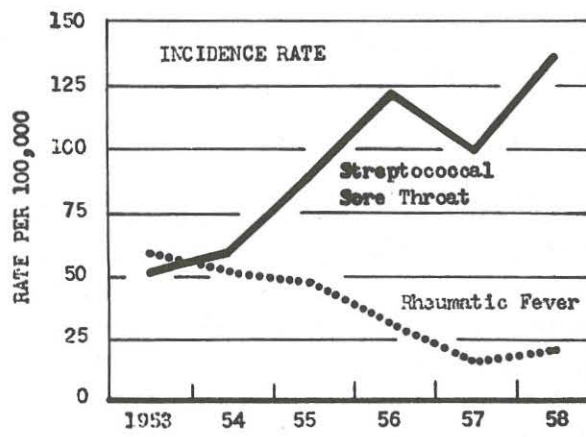


FIGURE 2.

RHEUMATIC FEVER AND

STREPTOCOCCAL SORE THROAT

1953-58



Since 1956, rheumatic fever incidence rates have been greater in the Marine Corps than in the Navy—30.7 and 18.6 per 100,000, respectively, in 1958. Furthermore, the Marine Corps incidence rate has remained fairly constant while the Navy rate has shown steady reduction.

The incidence of rheumatic fever in nonrecruits by geographical location is shown in Table A. These data indicate that nonrecruit personnel

stationed within the United States experienced a higher incidence than those aboard ships or stationed outside the United States, ashore. Also in evidence is the wide fluctuation each year of incidence among naval districts.

Table A.--RHEUMATIC FEVER INCIDENCE RATES, BY AREA, NONRECRUITS: 1956-58

(Rates per 100,000 average strength)

AREA	1958	1957	1956
Total	15.1	12.8	18.8
Continental	19.6	16.5	21.5
Naval District:			
1st	14.4	26.5	18.2
3d	22.5	29.9	33.3
4th	7.4	0	20.4
Potomac and Severn River Naval Commands	7.2	2.3	19.1
5th	26.6	6.9	28.2
6th	13.0	19.0	17.3
8th	42.8	9.7	50.8
9th	66.7	35.2	19.9
11th	15.8	26.7	15.6
12th	3.5	3.2	21.0
13th	19.9	20.0	10.4
Noncontinental	6.9	8.8	14.8
Ships	11.1	8.6	16.1

Table B.--RHEUMATIC FEVER INCIDENCE RATES, BY AGE GROUP: 1956-58

(Rates per 100,000 average strength)

AGE GROUP (YEARS)	1958	1957	1956
Under 20	47.1	29.5	52.1
20-24	17.2	19.1	34.2
25-29	9.9	4.6	11.3
30-39	7.1	3.2	8.1
40 and over	0	2.7	5.8

Table C.--RHEUMATIC FEVER INCIDENCE, RECRUITS, BY TYPE OF PERSONNEL: 1956-58

TYPE OF PERSONNEL	1958	1957	1956
	Rate per 100,000 average strength		
Total	180.4	127.7	249.5
Navy	147.0	91.6	238.5
Marine Corps	243.9	183.5	271.0

The high incidence of rheumatic fever among personnel less than 20 years of age (Table B) as well as among those with less than 6 months' service warrants an appraisal of recruit incidence from this disease. Examination of this group indicates that even during their low incidence year (1957) recruits accounted for 26% of the total cases. They accounted for 42% of the total cases in 1956 and 32% in 1958. The frequency of recruit incidence varied with the branch of the service. Marine Corps recruit incidence was constantly higher than that of Navy recruits (Table C). (Rheumatic Fever and Rheumatic Heart Disease, 1956 - 1958: Statistics of Navy Medicine, 16:4-11, March 1960)

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Do not squander heartbeats in cardiac disease—live within your income.

Osler

Current Problems in Salmonellosis

Within the past 20 years, important refinements in laboratory methods have contributed significantly to knowledge concerning the true nature of infections involving the gastrointestinal tract. Of particular importance are the gastroenteritides caused by various Gram-negative organisms including members of the genus Salmonella. Although much has been learned concerning bacteriology, serology, and epidemiology of salmonellosis, neither prophylaxis in, nor therapy for, this group of infections has attained a satisfactory state.

Definition. The term salmonellosis implies the infection of a human being or animal by one or several of the more than 200 bacterial serotypes comprising the genus Salmonella. Included in this group are the organisms more familiarly known as the "typhoid-paratyphoid" bacilli. Familiarity with salmonellosis has resulted in the realization that any one of several clinical syndromes may be produced by the same or different salmonella serotypes.

Epidemiology. Salmonellae are found in all parts of the world and occur frequently among various species of lower animals. Not only do many different serotypes occur both in animals and man, but there is a distinct correlation between the presence of the organisms in the lower animals and in the human population in a given locality. (For a detailed discussion of the epidemiology of salmonellosis and measures for control, see Preventive Medicine Section, Medical News Letter, Vol. 35, No. 2 of 22 January 1960.)

Although salmonellosis is widely distributed throughout the animal kingdom and salmonellae are to be encountered in many animal products, the role of the human carrier and the processing plant in the contamination of food products must not be underestimated. Also, it is well known that direct transmission from man to man may occur without the intervention of food.

Recent reports indicate that the number of infections with salmonellae other than S. typhosa has been increasing steadily and markedly in both man and lower animals during the past few years. Several hypotheses for this increase present themselves:

(1) Continuously increasing scope of food processing by commercial manufacturers increases the risk of widespread contamination from limited sources. Any break in sanitary control can result in extensive dissemination of salmonellae. These factors are accompanied by an increase in human salmonellae carriers.

(2) Protection against salmonellosis by vaccination is only relative and under conditions of heavy exposure infections may occur despite immunization.

(3) Increasing use of antimicrobials upsets the balance of the normal intestinal flora. By destroying bacteria which inhibit salmonella organisms,

the result is unrestrained development, invasion, and infection by salmonellae.

(4) Dissemination of salmonella organisms may be stimulated by steroid therapy.

The usual mode of human infection is by ingestion of contaminated substance, thus making the gastrointestinal tract the most frequent portal of entry. However, access to the body may be by the respiratory or genitourinary tract.

Pathology. After gaining admission into the body, the organisms initiate an infection which may vary from a mild gastroenteritis to a severe blood stream disease with extraintestinal localization such as pneumonia. Observations indicate that variable host susceptibility and reactability, rather than the parasite, are responsible for the varied clinical manifestations. However, some types of salmonellae seem much more likely to invade the blood stream than others.

Salmonellae frequently act as the "last straw" in persons whose resistance has been sapped by a preexisting disease. In patients with sickle cell anemia, salmonella infections—particularly osteomyelitis—do not appear to be a coincidence and may be due to several factors. The effect of dual infections has long been noted in both animals and man; salmonella infection superimposed on any other infection is frequently fatal. In several other diseases, there is strong evidence to indicate a specific predisposition to infection by salmonellae which far exceeds any general susceptibility to other bacterial species. These include malaria, relapsing fever, bartonellosis, and viral hepatitis.

Diagnosis. In view of the varied manifestations of salmonellosis, it has been suggested that signs and symptoms be classified into four clinical syndromes: gastroenterocolitis seen in approximately 67% of cases; septicemic or typhoidal syndrome, approximately 15%; focal manifestations, approximately 8%; or an asymptomatic state marked only by laboratory evidence of salmonellae in the gastrointestinal tract, approximately 10%. These syndromes may occur individually, simultaneously, or consecutively during an infection; but for the most part, there is nothing unique about salmonella infections.

Proof of salmonella infection depends on isolation and identification of the organism. Examination of blood serum for agglutinating antibodies often provides indirect evidence of infection, particularly when multiple studies demonstrate a significant rise or fall in titer of such antibodies. In the presence of an appropriate history and clinical findings, a titer of 1:80 is considered suggestive; a titer of 1:160 or higher, under the same conditions, is considered diagnostic in patients with no previous history of immunization.

Determination of the specific serotype is usually impractical. However, when possible, identification and typing may lead to a definite prognostic and therapeutic approach. In addition, this helps the epidemiologist and public health officer trace the source of infection and thus break the chain of transmission.

Treatment. For the most part, treatment of salmonellosis with antimicrobial agents has been unsatisfactory. There appears to be a puzzling disparity between in vitro sensitivity tests of salmonella and in vivo effectiveness of antimicrobial agents. This finding suggests that the differences in drug effectiveness in salmonellosis involve "drug-host" rather than "drug-parasite" relationship. Some observers have demonstrated that virtually all strains of salmonellae are inhibited by concentrations of chloramphenicol that are well within the range of serum levels attained in vivo by giving conventional doses of the drug. Also, many strains have been shown to be sensitive to kanamycin, polymyxin B, and neomycin. In addition, administration of massive dosages of penicillin in conjunction with probenecid to promote serum levels of penitillin in excess of 16 units per ml. has proved to be effective in treatment of certain types of salmonellosis.

Many cases of salmonella gastroenterocolitis are so mild and of such short duration they require no specific drug therapy. In those which are more severe or prolonged, chloramphenicol (0. 5 gm.) orally every 6 hours may be tried. Protracted therapy should be discouraged since the resultant disturbances in enteric flora may precipitate a generalized infection or produce an undesirable toxic side effect.

Management of septic and typhoidal forms as well as focal manifestations of the disease is somewhat better defined. Chloramphenicol should be given in comparatively large doses: an initial loading dose of 2 gm. orally, followed by 1 gm. every 4 to 6 hours until defervescence has occurred; therapy is then continued with 1 gm. every 6 to 8 hours for an additional 10 to 20 days. Parenteral administration of chloramphenicol alone or in combination with the oral route is indicated in seriously ill patients or in those unable to take the drug by mouth. The principal reason for prolonged therapy is to reduce the risk of relapse which occurs in an appreciable number of instances. Persistence of organisms in tissues and exudates is common, hence the importance of surgical drainage of suppurative processes. Because relapses have been attributed to suppression of immunity by early intensive antibiotic therapy, several alternate regimens have been recommended. One procedure involves intermittent therapy in which "rest" periods of 3 to 4 days are interspersed with antibiotic administration for 5 days over a period of 3 to 4 weeks. The other is repeated intramuscular administration of an appropriate dead salmonella antigen to induce an early antibiotic response during antimicrobial therapy. In addition, cortisone administered during the first 72 to 96 hours will frequently relieve the signs and symptoms of severe toxemia, although it may prove detrimental as far as perforation and bleeding of the bowel are concerned.

One of the most thorny problems in control of salmonellosis is the management of salmonella carriers. First of all, it is difficult to evaluate specific antimicrobial therapy in view of the highly variable periods of excretion of bacilli after intestinal infection. Antimicrobial agents have been disappointing in treatment of carriers. Hence, no useful purpose is served

by subjecting such individuals to repeated courses of therapy; it seems more desirable to restrict their food handling activities. Cholecystectomy is indicated in chronic carriers with evidence of gallbladder disease. In contrast to the chronic carrier, apparent success has been observed in treatment of convalescent carriers with chloramphenicol, kanamycin, polymyxin B, or neomycin.

Important steps in reducing the incidence of salmonellosis include: (a) accurate bacterial diagnosis and reporting of cases; (b) prompt epidemiologic follow-up; (c) education of domestic and public food handlers in matters of personal hygiene; (d) close supervision of abattoirs, food processing plants, and public eating places; (e) isolation of salmonella carriers; (f) discriminate use of antimicrobial agents; and (g) assessment of the need to include representative Group C organisms in the standard vaccine. (H. F. Flippin, G. M. Eisenberg, Current Problems in Salmonellosis: Am. J. Med. Sci., 239: 278-287, March 1960)

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Minor Respiratory Diseases

For the most part, minor respiratory diseases defy sharp clinical definition. They vary from mild, afebrile, coryzal infections—such as the common cold—to severe febrile, grippe-like illnesses, sometimes with involvement of the lower respiratory tract including the trachea, bronchi, and lungs. They may be chiefly limited to the nose and throat or they may consist predominantly of malaise and chilliness with minimal evidence of infection of the respiratory passages. For this reason, the minor respiratory diseases can be grouped together only by exclusion of infections due to identifiable known agents—infections which may, in fact, be indistinguishable clinically and epidemiologically unless the diagnostic aids of the laboratory are employed.

In one 10-year study of infectious diseases, it has been found that on the average there are ten illnesses per person per year. Two-thirds of these illnesses are respiratory infections, 95% of which fall into the group of minor respiratory diseases which are called "common respiratory diseases."

Appraisal of this problem—as is frequently the case in medicine—is ultimately dependent upon a knowledge of etiology; such knowledge is in turn dependent upon techniques for isolating and identifying causative agents. Because the process of grouping illnesses together as minor respiratory diseases involves the exclusion of illnesses due to infectious agents already known to cause respiratory disease, the assumption is made that a large proportion—if not all—minor respiratory diseases are due to viruses.

With rapid changes in available techniques for virus culture and identification during the last decade, exciting developments have been possible.

More than 70 new viruses have been isolated from man during this period; almost half of them are "respiratory tract viruses," the remainder are "enteroviruses." While certain viruses of the latter group occasionally may be associated with respiratory disease syndromes—Coxsackie viruses with herpangina and pleurodynia—this group is not included in this discussion.

Certain of the new "respiratory tract viruses" have been quite clearly identified as the cause of respiratory illnesses. Others have been discovered in association with respiratory disease without clear-cut evidence of their relationship to the disease. Still others do not seem to be related to any clinical illness and have been referred to as "viruses in search of a disease."

The rapidity with which new viruses have been isolated has inevitably led to a state of confusion and to problems of identification and terminology. However, most of them lend themselves to relatively broad groupings.

Adenoviruses. In 1938, a grippe-like illness clinically resembling influenza, but not caused by the influenza viruses, was identified. It was demonstrated to be transmissible and capable of producing immunity. In 1953, a group of investigators reported isolation of three new viruses from tonsillar and adenoidal tissue removed surgically from children. Their relationship to respiratory disease was not recognized until later when, in retrospect, their role was clarified. Since that time, the total of identified adenoviruses has reached 18 specific types. The syndrome of acute respiratory disease of recruits is caused principally by types 4, 7, and 14 and to a lesser extent by type 3.

The role of the adenoviruses in the production of epidemic respiratory disease in recruits—the major disease problem in military mobilization—has been amply demonstrated. The importance of the adenoviruses in production of disease in civilian life, however, is still uncertain apart from focal outbreaks. Vaccines containing types 3, 4, and 7 have been found to be highly effective in preventing acute respiratory disease in recruits and, use of such a vaccine will be an important aspect of military mobilization in the future.

Myxoviruses. The myxovirus group which includes such well known viruses as those of influenza, mumps, and Newcastle disease, has recently been augmented by addition of three new viruses termed parainfluenza viruses. The first type, discovered in Sendai, Japan, in 1953, was observed to produce a severe and sometimes fatal type of viral pneumonitis. Type 2, reported in 1955, was isolated from patients with a respiratory illness diagnosed as croup. The third was isolated from patients with acute febrile respiratory illnesses in the fall of 1957. Confirmation of the isolation of these viruses has now been obtained in various parts of the world, but as yet information regarding them is too meager to warrant an estimate of the segment of respiratory illnesses that these agents are capable of inducing.

It is known that almost all adults have antibodies to the parainfluenza-3 virus, and that between the ages of 3 and 5 years nearly all children have acquired antibodies to it. This must mean that the virus is widespread, but

whether infection with the virus produces clinical or, more frequently, subclinical infection has not been determined with certainty.

Other Viruses. Other viruses which have been isolated from patients with respiratory infections are, in all probability, capable of inducing minor respiratory illnesses. They include the chimpanzee coryza agent (CCA) known to be present in certain cases of pneumonitis in infants and children. Two additional viruses, the 2060 virus and JH virus, have been found in association with minor respiratory illnesses of mild severity. The true importance of these agents in the total picture of minor respiratory diseases has still not been determined.

The possibility of preparing a vaccine containing all known viruses associated with respiratory infections has been suggested in the hope that such a polyvalent vaccine might reduce the incidence of common respiratory diseases. Such a proposal is neither scientific nor ethical. Before any virus associated with respiratory illnesses is incorporated in a vaccine for general use in the population, it should be clearly demonstrated that: the virus causes the disease in question, the disease is followed by immunity, the virus can be grown in sufficient quantity to prepare a vaccine effective in the stimulation of antibody, there is a positive correlation between the presence of antibodies and resistance to infection, and finally, the incidence of illness caused by the virus is sufficiently great to warrant attempts to immunize on a mass or broad scale. At the present, these criteria can be met only in the case of the adenoviruses producing acute respiratory disease in military populations.

It is apparent that knowledge of the problem of minor respiratory diseases and their causative agents has been expanding rapidly. While there is still much confusion and ignorance, some semblance of order is emerging. However, it should be emphasized that, in the present state of knowledge, all these agents are responsible for a relatively small proportion of the total minor respiratory infections—none have been shown to be associated with the ordinary common cold. (J. H. Dingle, The Present Status of the Problem of the Minor Respiratory Diseases: J. Pub. Health, 50: 289-294, March 1960)

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Attitudes Toward the Use of Placebos

There are three significant aspects of the present status of use of placebos: little unanimity of opinion about indications for use, a marked discrepancy between the attitudes of psychiatric and nonpsychiatric physicians regarding their use, and delineation by psychiatrists of the underlying motives which has illumined both the question of use of placebos and some factors operating in the placebo effect itself.

While occasional nonpsychiatric physicians are adamantly opposed to the use of placebos or tend to be almost unqualifiedly opposed, most support their use unqualifiedly, almost unqualifiedly, or strongly in general, but with various qualifications, considerations, or cautions.

Most psychiatrists who have commented on placebos are not in favor of their use. Some are in favor of their use in general, with various qualifications, considerations, or cautions. Most, however, are either unqualifiedly, or almost unqualifiedly, against their use.

From review of opinions and the literature, it is clear that there are many attitudes toward the use of placebos in treatment. The factors responsible for these disparate opinions are complex. They include: semantic differences, dissimilar demand of reality, diverse theoretical orientations, ethical and philosophic values, and the personalities and unconscious conflicts of both the patient and the physician.

An important source of these differences of opinion is related to the different definitions of placebo, conceptions of what constitutes placebo effect, and beliefs concerning which therapies are effective independent of the placebo effect.

Some physicians limit definition of placebo to non-active (inert) medication while others include active (non-inert) medication. Some limit the definition to medication, but only when it is given by a physician with full knowledge that a placebo is being prescribed, while others include medication which is prescribed without the physician's knowledge that it is actually inactive, nonspecific, and acting like a placebo. Some view any discussion of whether to use placebos as being only an academic question because all therapeutic procedures can act as a placebo and a placebo effect is, in part, a consequence of almost all medical procedures, including surgery.

If the word "placebo" is limited to medication, it is possible that some of the differences between psychiatrists and nonpsychiatrists are due to the fact that, in general, psychiatrists prescribe less medication of all sorts than nonpsychiatrists. Perhaps nonpsychiatrists utilize the placebo as treatment more often—e. g., to strengthen the patient-doctor relationship—than psychiatrists who prefer to treat without capsular crutches. It is not clear to what extent therapies such as psychotherapy act independently of the placebo effect.

The disinclination to use placebos in psychiatry is reflected in the attitude toward their use during psychotherapy. Most psychiatrists think that when "good psychotherapy is available or practical" a placebo is not indicated. The giving of placebos during psychotherapy may be viewed as compromising some major psychotherapeutic principles. It involves the substitution of activity for verbalization. It dissipates anxiety on the part of both the physician and the patient. On the other hand, some writers, in recent years, have theorized that a decrease in anxiety produced by pharmacologic means can facilitate psychotherapy.

Whether brief psychotherapy is a feasible and superior alternative to placebo therapy is also not yet known. Another question requiring clarification is whether the giving of placebos or other treatment at the beginning of an acute psychiatric illness instead of psychotherapy might interfere with the maximal benefit possible in any psychotherapeutic treatment used later.

An ideal situation would be one in which all symptoms, syndromes, diseases and their therapies were completely understood, in which time, finances, and personnel necessary for this were available and in which no question of "deceit or deception" could be raised. Obviously, this is an idealistic position. It ignores the limitations imposed by reality and practicality.

An idealistic position also ignores the plight of the over-burdened general practitioner and even physicians in internal medicine for, in fact, 50 to 80% of their patients have primary functional complaints. It overlooks the merit of being able to treat many patients with a minimum of time and without incurring serious financial difficulties. If the ideal were practiced today, the vast majority of patients could not possibly be treated at all; they would probably resort to various and sundry charlatans for help. Would it be justifiable for the patient and physician, considering the realities involved, to advise intensive, extensive, and expensive treatment for conditions that might respond to an inexpensive and brief procedure?

Although much could be said for both views and, although the idealistic viewpoint is at one end of a continuum, it does not follow that the ideal should not be approached—rational therapy should supplant the use of placebos in treatment when possible.

Much of the material available implies or hints at important ethical attitudes whether stemming from, or underlying, the use of placebos. Perhaps all that should be said is to acknowledge the fact that the practice of prescribing placebos is inevitable at the present time. What is certain, however, is that with increasing knowledge of the factors underlying placebo action in particular and the therapeutic process in general, such ethical considerations will diminish in importance or at least be clarified. (J. D. Shapiro, Attitudes Toward the Use of Placebos in Treatment: J. Nerve & Ment. Dis., 130: 200-211, March 1960)

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Cancer Cells in the Blood Stream

Although reports of cancer cells in the blood stream have appeared sporadically in the medical literature over the past 100 years, only recently has it been possible with newer techniques to isolate and definitely identify these cells. Not only are cancer cells present in the blood stream of many patients with malignant disease, but—more remarkably—these malignant cells may be found in the circulating blood of "curable" patients.

In a series of cases studied by the authors, 20% of such "curable" patients had malignant cells in the peripheral blood with a higher percentage in veins draining the tumor. "Incurable" patients are more likely to have such cells in the blood stream—29% in peripheral blood and 37% in blood draining the tumor. Although, in the authors' experience, it is not surprising to see patients with sarcoma and melanoma with cancer cells in the blood stream, it is somewhat more surprising to find cells from adenocarcinoma, epidermoid carcinoma, and transitional-cell carcinoma in the numbers seen.

The full significance of the presence of cancer cells in the blood is not known, although one observer recently reported no difference in survival in a 5 to 9-year follow-up. Undoubtedly, many circulating cancer cells are destroyed by the natural defenses of the human host. The authors were impressed by one prognostic sign—on every occasion that cancer cells were found in the peripheral (antecubital) blood of a patient with a malignancy of the digestive tract, the patient was either nonresectable or "incurable." This clearly indicates the probable role of the liver in destruction of cancer cells carried to this organ in the portal flow. When, for some reason, this capacity for destruction is overcome, cancer cells are found in the peripheral blood and the patient is no longer "curable." However, it must be emphasized that absence of malignant cells does not mean that the lesion is operable, because local spread of the tumor and imperfect methods for finding cancer cells must be considered.

Although the number of cases is not large enough to be significant, the authors have seen showers of cancer cells incident to various forms of manipulation of the tumor including physical examination, diagnostic work-up, skin preparation prior to surgery, and operative manipulation. Of further interest is the fact that this effect of manipulation was not recognized until they began to take multiple samples during these manipulative procedures.

It has been observed that, in at least two ways, the number of cancer cells found in the blood may be decreased in number. The first such observation was made in postoperative patients who had celiotomy or other surgical procedure and at the time of operation were found to be inoperable. After such an event there was usually a decrease, but not a disappearance, of the circulating cancer cells. The original level was once again attained about one week after the operative incident. This may mean that the host ability to destroy these cells is increased during this period or, conversely, that the body defenses are at such low ebb that the "floating" malignant cells are immediately attracted to a site favorable for growth instead of making several circuits through the vascular system. Chemotherapy is the second event which may cause a decrease in the number of malignant cells present in the blood. It is hoped that this represents death of the cancer cells caused by the agent used.

These observations stress the necessity for not doing anything to a patient with malignant disease which might cause entry of the malignant cells

into the blood stream. Venous trunks leading to and from the tumor should be tied off as early in any surgical procedure as practical and manipulation of the tumor should be minimal. (L. Long, et al., Cancer Cells in the Blood Stream: A. M. A. Arch. Surg., 80: 639-645, April 1960)

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Anabolic Steroids in Surgical Patients

Following major surgery or trauma, patients usually undergo a period of tissue depletion which is termed a catabolic response. This response can be attributed to an increased need for protein and calories for wound healing and energy. There is often a simultaneous decrease in intake of these nutrients, and the protein and energy stores of the body are utilized to make up the difference between expenditure and intake. This wasting may be detrimental to convalescence and, in seeking a solution to this problem, surgeons have made use of the experience of those in other fields in an attempt at minimizing catabolism and promoting preservation of body tissue. In various conditions, tissue anabolism is desirable and in each condition anabolic steroids produce benefit.

Metabolism studies on traumatized patients have shown an increased excretion of nitrogen and the intracellular cation, potassium. Most studies show an over-all negative balance of these elements suggesting that tissue protein is being dissipated. According to present understanding, protein is of primary importance in muscle contraction, oxygen transport, and energy utilization. Most processes that enable the organism to function bear a relationship to the adequacy of protein stores. Likewise, it is accepted that sizable losses of protein and potassium are associated with interference with maximally effective performance. By this process of reasoning, it is concluded that to minimize the catabolic response to trauma would be to shorten convalescence and hasten return to full capacity for activity. This conclusion, although logical, is difficult to prove by objective measurements.

It is apparent that the period of starvation which almost invariably accompanies trauma of any sort is of major importance in the genesis of the catabolic state. When trauma is accompanied by infection and fever, the demands upon the body's protein stores are increased to the point where even ideal nutritional therapy will not maintain nitrogen balance. Avoidance or prevention of these conditions combined with supplemental IV administration of adequate calories and nitrogen will accomplish much in maintaining nitrogen balance.

There are two additional theoretic possibilities that may be effective in helping to maintain nitrogen equilibrium: reduction of total caloric expenditure and redistribution of caloric expenditure so that protein is conserved and fat and carbohydrate provide a greater proportion of energy. The first possibility

may be accomplished through use of hypothermia, but the end probably does not justify the means. The second possibility is concerned with evidence that anabolic steroids influence metabolic pathways toward decreasing the proportion of energy derived from protein. Carbohydrate and fat are available for this source of energy with the latter being the only source that exists in the body in quantities sufficient to deliver an appreciable amount of energy over a period of days. The mechanism by which fat is utilized and protein spared is probably a direct action of the anabolic hormone upon the tricarboxylic acid cycle and not an influence upon adrenal and pituitary hormones.

Agents. The term anabolic steroids refers to a group of chemically related substances exerting similar physiologic influences. Most of the chemicals in this group occur naturally—originating in the adrenals and gonads—while others have been synthesized. Two physiologic properties are common to all known anabolic hormones: all stimulate some secondary sex characteristics and, by definition, all have a "constructive effect" upon metabolism. Evidence of an anabolic state may be as concrete as a visible increase in muscle mass and strength or as intangible as a positive nitrogen balance. A third property common to many anabolic steroids is a tendency to produce sodium retention; some quantification of this tendency is necessary to predict clinical usefulness.

Although pituitary growth hormone is not an anabolic steroid, it seems to possess anabolic properties which are of considerable interest. This substance when available for clinical use may prove to be the most valuable of the anabolic agents. Proper evaluation must await further studies.

Metabolic Activity. There is little doubt that in a variety of disease and traumatic states, anabolic steroids influence the nitrogen balance in a positive direction. It is generally accepted that this effect is almost negligible if the nutritional intake is grossly inadequate either in calories or protein.

Troublesome side effects have only rarely been noted by investigators using these agents clinically. A number of agents with sufficiently low androgenicity permit reasonably long-term administration. It is the authors' belief that moderate salt restriction—60 to 80 mEq. of sodium per day—is a desirable precaution when these agents are used except when abnormal extrarenal losses occur. Avoidance of sodium overload is probably all that is necessary in the absence of cardiac, hepatic, or renal disease or severe malnutrition.

Exactly what happens to the nitrogen which is retained under the influence of anabolic steroids has not been clearly established. Some observers have demonstrated retention within the body of a greater percentage of labeled glycine. Apart from the nitrogen-retaining capacity of anabolic agents, some investigators have noted an effect more difficult to substantiate or measure—a sense of well-being.

Indications. It is apparent that available evidence for clinical usefulness of anabolic agents falls short of the evidence considered to be conclusive.

Consequently, their use should be restricted to: (1) controlled investigational situations; (2) severe subacute or chronic illness in which the nutritional status of the patient materially influences the course of recovery or the likelihood of survival; and (3) certain patients whose illness stems from an excess of antianabolic or catabolic hormones.

The second category in which use of anabolic agents may be considered in the light of present knowledge includes those conditions associated with long periods of debility and wasting. The criteria for selection of these patients is far from clear-cut, but it must be emphasized that anabolic steroid therapy can never be considered a last ditch, desperate, life-saving measure. In cases of debilitating illness, it will be at best a small adjunct to well planned, long-term nutritional management.

There are certain patients with thyrotoxicosis and Cushing's disease in whom chronic protein depletion is severe enough to constitute a deterrent or contraindication to curative operation. In such patients, anabolic steroid therapy could well be helpful in arresting and reversing the catabolic state.

Osteoporosis should be considered in the same category. It is established that this condition results from a withdrawal of gonadal anabolic steroids in the course of aging. The most important consequence of the ensuing catabolic state is interference with formation of bone matrix. Controversy exists as to whether osteoporosis should be considered a disease or a natural process of aging. It is believed that anabolic agents of the androgenic type are most effective in producing an increase in bone matrix, while those of estrogenic derivation have an additional beneficial effect upon calcium metabolism. It is concluded that in osteoporosis a combination of these agents should be used. (J.S. Bradshaw, W.E. Abbott, S. Levey, Ph.D., The Use of Anabolic Steroids in Surgical Patients: Am. J. Surg., 99: 600-607, April 1960)

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Pancreatic Calcification and Cancer

Development of pancreatic calcifications, either in the parenchyma of the gland or within the lumen of the pancreatic ducts, is a widely known phenomenon. The precise mechanism of production of these calcifications is not completely understood, however, although calcification may occur at any stage in all the clinical varieties of acute and chronic pancreatitis.

The incidence of pancreatic calcification is not low. Most commonly, calcifications within the pancreas are seen in the longstanding cases of chronic relapsing pancreatitis in which the whole organ may be replaced by fibrotic and calcified tissue with tremendous impairment of its functions. The general impression is that pancreatic calcinosis appears to be most frequent in the alcoholic variety of pancreatitis.

An important surgical consideration in patients with pancreatic calcinosis is its relationship to pancreatic cancer. In the past, presence of

definite calcifications in the pancreas has been some measure of comfort to the surgeon exploring a patient and faced with the choice of determining by palpation whether the mass felt in the pancreas was benign or malignant. The general impression was that calcifications indicated a benign lesion and that there was no relationship between pancreatic inflammation and pancreatic cancer. Recently, however, several have raised the question of the possible development of carcinoma of the pancreas in patients with chronic pancreatitis and pancreatic lithiasis.

The authors made a study of the incidence of pancreatic calcification in patients with chronic pancreatitis and cancer of the pancreas treated between January 1945 and March 1959. Special attention was given to etiology of the pancreatitis and to relationship of presence of calcification to carcinoma. Review of the records revealed 417 patients with carcinoma of the pancreas and 100 patients with chronic pancreatitis.

The importance of alcoholism in the etiology of pancreatic calcinosis can be estimated from the fact that, in the authors' series, its incidence as etiology occurred approximately four times more frequently in patients with chronic pancreatitis with calcinosis than in patients with chronic pancreatitis without calcinosis. These findings are considered to be in accordance with reports of others. The authors also found that the incidence of pancreatic cancer was 6% in the total group of chronic pancreatitis. Not one patient without calcification among 100 patients with chronic pancreatitis developed carcinoma. On the other hand, six carcinomas were found in 24 patients with pancreatic lithiasis.

Data clearly show that while pancreatic calcification is relatively rare among cases with pancreatic cancer (1.4%), pancreatic carcinoma is strikingly common in patients with pancreatic calcification (25%).

One can no longer accept with equanimity the supposition that clinical evidence of longstanding chronic pancreatitis makes pancreatic carcinoma unlikely or that the operative finding of pancreatic stones excludes pancreatic cancer. On the contrary, the high incidence of cancer in calcinosis calls attention to a probable relationship between the two on the basis of chronic irritation.

In the authors' series, it is conspicuous that only one of six patients with pancreatic calcinosis and pancreatic cancer had good documentation of a long history of chronic pancreatitis and the resultant pancreatic calcinosis, presumably preceding development of cancer. Thus, only one case exemplifies the modern concept of longstanding chronic pancreatitis, particularly due to alcoholism and resulting in pancreatic calcification upon which substratum—and as a consequence of longstanding chronic irritation—cancer develops.

The findings presented suggest that pancreatic lithiasis may possibly be a precursor of carcinoma. If this is the case, a suggestion that pancreatectomy for pancreatic lithiasis is in order. Actually, partial pancreatectomy is being accomplished as one of the treatments for chronic pancreatitis. (A. Paulino-Netto, D.A. Dreiling, I.D. Baronofsky, The Relationship Between Pancreatic Calcification and Cancer of the Pancreas: Ann. Surg., 151:530-541, April 1960)

NAMRU-2 Conducts Field Investigations

The staff of the Parasitology Department of U.S. Naval Medical Research Unit No. 2 in Taipei, continuing their biologic and geomedical studies on Taiwan and in countries of southeast Asia, conducted an expedition to Hualien on the east coast of Taiwan during April this year. The group of 15 investigators and technicians, led by CDR Robert E. Kuntz MSC USN and LT William H. Wells MSC USN, made various field investigations with emphasis on internal parasites of vertebrates as well as on ectoparasites that may serve as vectors for diseases of man and domestic animals

The NAMRU group was accompanied by investigators with varied interests: COL Robert B. White USAF (Ret), Associate of the American Museum of Natural History, collecting mammals and reptiles; Chester M. Fennell, ornithologist from Korea, collecting for the University of California at Berkeley; Z. M. Dien, Curator of Birds, Taiwan National Museum; and Nelia Salazar, Research Associate in Parasitology from Manila, Republic of the Philippines. Technical assistance was given by W. H. Bistline HM1 USN, and Bob Davis HM1 USN as well as technicians of the Parasitology Department of NAMRU-2.

During 3 weeks in the field, approximately 1,000 vertebrates were prepared for study by museums in the United States and over 500 hosts were examined for parasites. Internal and external parasites — as well as blood smears from hosts examined—were prepared for study by recognized experts in the various aspects of parasitology. The Parasitology Department of the Unit in Taiwan has more than a dozen cooperative projects with universities, museums, and research institutions in America and other countries.

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Prevention of Heat Casualties - Film Release

A new Medical Department film, Prevention of Heat Casualties, (MN-8965), (color, 25 min.) is of interest to anyone concerned with working or training in hot weather. The new release was filmed at the Marine Corps Recruit Depot, Parris Island, S. C., where heat problems are part of the plan of the day. The film depicts, under conditions of severe climatic heat, problems of heat stress and the principal types of heat illness that can occur when heavy work is required during hot weather. It presents causes of, and general preventive measures to be taken against, heat illness. Use of instruments to determine the "wet-bulb-globe-thermometer-index" is demonstrated, and application of the index to control of work or training is discussed. Prints are being distributed to Naval Training Aids Center, Sections, and Libraries. If not available from the usual source, address Film Distribution Unit, Training Division, Bureau of Naval Personnel, Department of the Navy, Washington 25, D. C.

DIRECTIVES

BUMED NOTICE 1700 21 April 1960

Subj: Social service histories obtained by the American Red Cross

This Notice calls attention to BuMedInst 1700. 1 and requests compliance with its provisions. It stresses that information from social service histories obtained by the American Red Cross are to be handled as privileged material and that such reports are not to be included as part of clinical records or reports of various medical boards.

BUMED NOTICE 6120 21 April 1960

Subj: Physical examinations; conducting and reporting results of

This Notice encourages careful review of requirements in the Manual of the Medical Department and current directives concerning physical standards, examining procedures, and proper reporting of results.

BUMED NOTICE 6320 20 April 1960

Subj: Hospital Corpsmen; policy relative to work hours

The Chief, Bureau of Medicine and Surgery, continues to be concerned about excessively long working hours for hospital corpsmen. During recent years, improvement in total hours of work per week has been gratifying; however continuing effort is solicited to the end that the most effective utilization of hospital corpsmen may be achieved and normal working hours further decreased. This Notice requests additional reports to indicate relative watches and work hours for hospital corpsmen.

BUMED INSTRUCTION 6150. 22 26 April 1960

Subj: Dependents outpatient treatment records; standardization of, and procedures for handling

This Instruction sets forth procedures for establishing a more standard type record (forms and jackets) for use in recording outpatient care and treatment rendered to dependents.

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American Board Certifications - Active Duty

American Board of Anesthesiology
CDR Homer P. Wiley

American Board of Dermatology
LT Richard G. Davis, LT Richard H. Grimmett, LT Ralph A. Heising, LT Sophocles D. Marty (USNR), LT Alden R. Parker (USNR), LT Robert N. Schneiderman (USNR), LT Robert W. Steagall Jr.

American Board of Gastroenterology
CDR Orville F. Nielsen

American Board of Neurological Surgery
CDR Leland C. Brannon

American Board of Orthopedic Surgery
CDR Jaime M. Benavides Jr., LCDR William E. Hayes, CAPT John J. Rieder

American Board of Pathology
LT Thomas L. Tombridge (USNR)

American Board of Pathology in Pathologic Anatomy
CAPT William M. Crafft

American Board of Pediatrics
LCDR Herbert L. Eckert, LT George R. Hilty III, LT Howard A. Pearson

American Board of Plastic Surgery
CDR Robert A. Loeffler, CDR Thaddeus E. Starzynski (USNR)

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From the Note Book

52nd Anniversary of Navy Nurse Corps. On 13 May 1960, the Navy Nurse Corps marked the 52nd year in which it has proved itself a vital and unique component of the sea service. Through the Nurse Corps skills of hundreds of professionally trained women have been effected in behalf of injured and sick men, often in desperate need of these skills. In 1908, after years of urging, Congress passed the Act authorizing establishment of the Nurse Corps. The intervening years have seen many changes, but service with a woman's touch continues to be the proud tradition of the Navy's Nurse Corps.

Safety Awards to Naval Hospitals. Ten U.S. Naval Hospitals have earned the Secretary of the Navy Award for Achievement in Safety for calendar year 1959. Each of the hospitals, among 162 naval activities chosen for the award, has won the award previously; The U.S. Naval Hospital, Guam, M.I., receiving it for the 9th time. Other hospitals and number of present award are: Beaufort, S.C. (7th); Bainbridge, Md., Philadelphia, Pa., and Quantico, Va. (6th); Great Lakes, Ill. and Charleston, S.C. (5th); Camp Pendleton, Calif., Memphis, Tenn., and Bremerton, Wash. (4th). (TIO, BuMed)

Army Aeromedical Symposium. An Army-wide Aeromedical Symposium is to be held at the San Carlos Hotel, Pensacola, Fla., 6 - 9 June 1960, sponsored by the United States Army Board for Aviation Accident Research. Prominent speakers in the field of aviation medicine, drawn from all three services and civil agencies, will present discussions on a wide variety of aeromedical subjects. The Navy will be represented by authorities in their subjects from the Naval Aviation Safety Center, Norfolk, Va., and the School of Aviation Medicine, Pensacola, Fla. (USABAAR, Fort Rucker, Ala.)

CAPT Graybiel Honored. The Navy League Award Board has announced that CAPT Ashton Graybiel MC USN, Director of Research, U.S. Naval School of Aviation Medicine, Pensacola, Fla., has been selected to receive the Admiral William S. Parsons Award for Scientific and Technical Progress for 1960. Dr. Graybiel, who has earned an international reputation for his work in the fields of Cardiology and Aviation Medicine, was nominated for the award in recognition of his participation in recent Bio-space flights, especially his efforts as Medical officer in charge of the now famous Able-Baker monkey flight. Dr. Graybiel joined the research staff of the school in 1942 and assumed his present position in 1945. During a busy and brilliant career, Dr. Graybiel has found time to write more than 140 articles and two books on medicine. (TIO, BuMed)

Dr. Hoogstraal Receives Award. The Department of Defense Distinguished Civilian Service Award—highest honor conferred on civilian employees by the Department of Defense—has been presented to Dr. Harry Hoogstraal, Head, Department of Medical Zoology, Naval Medical Research Unit No. 3, Cairo, U.A.R. One of four recipients, Dr. Hoogstraal received the award as the result of his work with ticks and tick-borne diseases of man and animals. His unique work is not only of major significance to military medicine, but to the welfare of all peoples of regions where tick-borne diseases are a serious health problem. Dr. Hoogstraal recently received the Secretary of the Navy Distinguished Civilian Service Award (Medical News Letter, 19 February 1960). (DOD, OPA)

Plasma Factor in Schizophrenia. The authors measured the conversion of the 1 carbon and the 6 carbon of glucose to CO_2 by the blood of schizophrenic

patients and of control subjects before and after administration of insulin. From the results, it was concluded that in the plasma of schizophrenic patients there must be either an abnormal substance or an excessive amount of a normal substance which interferes with the control of carbohydrate metabolism and energy transfer. The data from other work suggest that a factor in plasma of schizophrenic subjects interferes with some phase of hydrogen transport. (C. Frohman, et al., AMA Arch Gen Psychiat, March 1960)

Fibrinolysin Therapy. From observations of 62 patients, the authors conclude that addition of fibrinolysin to the therapeutic regimen leads to more rapid clearing of the acute episode of deep thrombophlebitis and may diminish the short-term incidence of phlebitic recurrence and pulmonary embolization. Post-phlebitic residuals were encountered with about the same frequency as in a group not receiving fibrinolysin. Although favorable influence of fibrinolysin on long-term prognosis is apparent, recurrence and embolization can be expected. (K. Moser, et al., Circulation, March 1960)

Long-Term Anticoagulant Therapy. Data based on evaluation of results of long-term anticoagulant therapy in a group of 336 patients, indicate that maintaining anticoagulant therapy does not arrest the underlying disease process and that, upon discontinuance, the thrombotic tendency again becomes manifest and even shows a tendency to "catch up." Thus, evidence suggests that there is no time when it is safe to discontinue anticoagulant therapy in the more serious thromboembolic diseases. (A. Thomes, et al., Circulation, March 1960)

Bovine Heterografts as Arterial Replacements. Reporting observations at the Graduate School of Medicine, University of Pennsylvania, the authors conclude that no improvement in successful heterologous vascular bovine-to-dog transplants was achieved by attempts to reduce immunologic response by storage of grafts in donor plasma at 5° C. for from 4 to 6 weeks. The grafts function satisfactorily as temporary shunts only. The "ideal" blood vessel substitute still needs to be sought. (LT J. Johnson MC USN, et al., AMA Arch Surg, April 1960)

Respiratory Illnesses. Studying recruits at the Naval Training Center, Great Lakes, Ill., the authors analyze and compare clinical manifestations of respiratory illnesses due to Asian strain influenza, adenovirus, and of unknown cause. Their study indicates the subtle but real differences in the composite picture of illness caused by influenza and adenovirus infections, and reemphasizes the importance of clinical observations in the diagnosis of viral respiratory infections. (LT I. Schultz MC USNR, et al., J Lab Clin Med, April 1960)

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Recent Research Reports

U. S. Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Experimental Tests of Spence's Incentive Motivational Factor, K. MR 005. 15-1002. 03, Report No. 2, 6 November 1959.
2. Studies with Drug-Resistant Strains of Psittacosis Virus. II. Derivation of Strains with Dual Drug Resistance from Mixed Culture of Singly Resistant Strains. MR 005. 09-1200. 03, Report No. 2, 16 November 1959.
3. Differential Hypothermic Cardioplegia. MR 005. 12-0002. 04, Report No. 2, 8 December 1959.
4. Resting and Action Potentials of the Squid Giant Axon in Vivo. NM 000 018. 03. 04, 12 December 1959.
5. Liquid Junction and Membrane Potentials of the Squid Giant Axon. NM 000 018. 03. 05, 12 December 1959.
6. Studies of the Dermis in Skin Homografts. MR 005. 02-0001. 03, Report No. 3, 8 January 1960.
7. The Response Properties of Single Ganglion Cells in the Goldfish Retina. MR 005. 03-1001. 02, Report No. 2, 29 January 1960.
8. Relationship of Tropical Hydrocele to Filariasis in Puerto Rico. MR 005. 09-1033. 01, Report No. 1, 29 January 1960.

U. S. Naval Medical Research Unit No. 3, Cairo, Egypt

1. Visual Acuity Under Red vs. White Illumination. MR 005. 14-1001. 01. 10, Report No. 326, January 1960.
2. Studies on Paralytic Poliomyelitis in Cairo, U. A. R., 1957 - 1958, MR 005. 09-1202. 2. 01, February 1960.
3. Clinical Observations on Proven Paralytic Poliomyelitis, Cairo, U. A. R., 1957 - 1958, MR 005-1202. 2. 02, February 1960.

U. S. Naval Medical Research Unit No. 4, Great Lakes, Ill.

1. Antistreptococcal L Form Complement-Fixation Serum Titers and Their Relation to Antistreptolysin O Titers of Naval Recruits in Outbreaks of Group A Streptococci and in Rheumatic Fever. MR 005. 09-1300. 5. 2, 29 February 1960.

U. S. Naval Air Development Center, Johnsville, Pa.

1. Transfer of Training Among Components of a Complex Velocity Control Task. MR 005. 15-1003. 1, Report No. 3, 28 December 1959.
2. High G Protection. MR 005. 12-0007. 2, Report No. 7, 12 February 1960.
3. X-Irradiation and Acceleration Stress. MR 005. 15-0002. 14, Report No. 1, 1 March 1960.
4. A Computer Solution for Determination of Thermal Tissue Damage Integrals from Experimental Data. MR 005. 15-2002. 1, Report No. 17, 9 March 1960.

DENTAL SECTION

Reduction of Acute Dislocation of the Temporomandibular Articulations

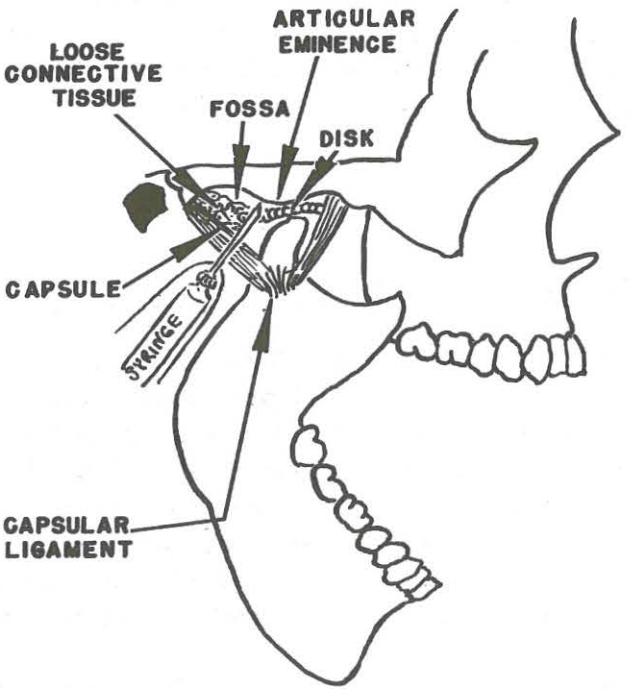
The temporomandibular articulation is the only joint in the human body which can be dislocated without action of external force. (H. Sicher, Oral Anatomy, C. V. Mosby Co., St. Louis, Mo., 1949). In dislocation, the condyle of the mandible rests on the anterior slope of the articular eminence, or anterior to it, on the infratemporal plane.

In any dislocation of the temporomandibular articulation, reduction by means of forcing the muscles and ligaments to yield is contraindicated. Probably the most practiced and certainly the treatment of choice—according to almost every oral surgery textbook—is manual manipulation. This method of reduction is accomplished by opening the jaws as widely as possible, depressing the mandible in the molar region, and forcing the rami upward and backward.

A new method for the painless reduction of acute, bilateral dislocations of the temporomandibular articulations has been developed. The reduction is accomplished by unilateral injection of local anesthetic into the tissues of the temporomandibular joint space. Over a three-year period, seventeen patients have been successfully treated with this procedure with no adverse reactions.

Method. The preauricular area of the face is prepared with an accepted skin antiseptic. Either the right or left preauricular area may be used as the site of injection as it is only necessary to inject the local anesthetic unilaterally despite the fact that the dislocation may be bilateral. The gloved index finger palpates the depression of the glenoid fossa; this is easily accomplished as the heads of the condyloid process are locked anterior to the eminences in the articular plane. A 1.8 ml. Carpule of lidocaine hydrochloride is loaded into the breech of a syringe equipped with a 25 gauge, 1-7/8 inch needle—the usual length and gauge for intraoral injections. The needle is inserted into the subcutaneous tissues of the depression of the glenoid fossa, while directing the needle inward and slightly anterior toward the head of the condyloid process. The anesthetic solution is injected slowly as the needle progresses into the tissues. When the posterior slope of the eminence or the head of the condyloid process is contacted, the needle is slightly withdrawn

and the remaining anesthetizing solution is injected into the tissues surrounding the glenoid fossa. The needle is then withdrawn. (See illustration)



Relationship of condyle to articular eminence in acute, anterior dislocation. Note stretching of capsule, capsular ligament and nerve bearing loose connective tissue and attachment of this tissue to disk. Also note needle direction and approximate site of deposition of local anesthetic.

The medial and anterior direction of the needle places the capsule, capsular ligament, and the loose connective tissue of the temporomandibular joint in the area of the injection. The local anesthetic is injected causing the nerve impulses to be arrested; relaxation of the muscles of mastication then occurs. Thus, the dislocation of the temporomandibular joint is self-reducing.

Because it has been necessary only to inject the local anesthetic unilaterally in the reduction of bilateral dislocations of the temporomandibular articulations, it becomes apparent that there must be a bilateral synergistic action of the muscles of mastication. This synergistic action is seen in the spasm of the muscles bilaterally in acute dislocations. Conversely, if one set of muscles is relaxed by means of local anesthesia, the opposite set becomes relaxed without anesthetic interference. This is a personal observation and has been observed only in bilateral dislocations. No instances of unilateral, nontraumatic, acute dislocations have been observed by the author. Unilateral subluxations have been observed in

instances of chronic subluxation, but in each instance the patient has been able to reduce the subluxation without undue difficulty.

In all of the seventeen patients, the dislocations were reduced spontaneously without manual manipulation in approximately one minute. In one instance, in a dislocation of three days' duration, a bilateral injection was made because at the time it was not realized that the injection was required unilaterally only. (CAPT W. Basil Johnson DC USN, J. Oral Surg., 16: 501-504, November 1958)

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Personnel and Professional Notes

Panel on Mouth Preparation for Dentures. The importance of cooperation and teamwork between the oral surgeon and prosthodontist was stressed when a panel of six specialists presented a discussion on "Mouth Preparation for Dentures" at the U.S. Naval Dental School, 15 April 1960. The staff, resident and postgraduate Dental officers, Dental officers attending short courses in Casualty Care and Oral Surgery, and civilian and military guests were present. The discussion showed how such teamwork can result in beneficial treatment for the patient and conservation of oral structures.

Members of the panel were: RADM A. W. Chandler (Ret), former Chief for Dentistry, Bureau of Medicine and Surgery; COL E. H. Smith Jr., Dental Division, office of The Surgeon General, USA; Dr. G. O. Kruger Jr., Professor of Oral Surgery, Georgetown University School of Dentistry; and Dr. R. J. O'Brien, Oral Surgeon, Arlington, Va. The discussion was moderated by CAPT D. E. Cooksey, Head of the Oral Surgery Division, and CAPT R. B. Lytle, Head of the Complete Denture Branch of the Dental School.

CDR Growney Attends White House Conference. CDR M. R. Growney DC USNR, member of Reserve Dental Company 12-1, San Francisco, attended the Golden Anniversary session of The White House Conference on Children and Youth, 27 March - 1 April 1960, representing the California State Dental Association.

DR Cheraskin Presents Clinic at Naval Dental School. E. Cheraskin—both M. D. and D. M. D. —Professor and Chairman of the Division of Oral Surgery and Oral Medicine at the University of Alabama School of Dentistry, and Assistant Professor in the Department of Medicine, Medical College of Alabama, presented a clinic entitled "The Oral Manifestations of Carbohydrate Imbalance," 29 April 1960, at the U.S. Naval Dental School. Dr. Cheraskin discussed the systemic action of carbohydrate imbalance upon the oral cavity by a consideration of a number of common oral symptoms and signs correlated

with biochemical analyses for blood glucose. The lecture was presented to the Dental Officers of the Armed Forces, civilian dentists, and other interested scientific personnel of the Washington, D. C. area as part of the special lecture series presented by the U. S. Naval Dental School.

CDR Ellis Presents Clinic. CDR F. N. Ellis DC USN, U. S. Naval Hospital, San Diego, Calif., recently presented a clinic—Veneer Crown Preparations in Fixed Bridgework—before the Tri-County Dental Society during a meeting held at March Air Force Base Officers' Club, Riverside, Calif.

CAPTs Hamilton and Swearingen Present Symposium. Mass Casualty Training, a symposium by CAPTs T. R. Hamilton and J. P. Swearingen of the Administrative Command, Naval Training Center, Great Lakes, Ill., was recently presented to two units of the Illinois State Dental Society—the Fox Valley Component at St. Charles, and the Whiteside-Lee Component at Rock Falls.

CAPT Collett to Present Clinic. CAPT H. A. Collett DC USN, Naval Air Station, Jacksonville, Fla., has been invited to participate as a clinician with the Academy of Denture Prosthetics which meets in San Juan, Puerto Rico, 19 - 24 June 1960.

In-Service Training Program. A novel innovation in the Inservice Naval Training Program for Career Dental officers on duty at activities in the 12th Naval District was introduced when CAPT L. H. Dahl DC USNR-R of Naval Reserve Dental Company 12-1, assisted by Alexander Petrilli, M. D., and Gerald F. O'Connor, M. D., presented a day-long course—The Clinical Approach and Treatment of Temporomandibular Disorders. Dr. Pertilli discussed the techniques of taking tomograms of temporomandibular joint areas. Dr. O'Connor presented a patient affected by anomaly of the mandibular joint and related structures.

The program was conducted by CAPT Dahl on 14 April 1960 at the Dental Department, U. S. Naval Station, Treasure Island, San Francisco, Calif., where CAPT A. D. Eastmen DC USN is the Senior Dental Officer. This was the first time a Reserve Dental officer on inactive duty has conducted an inservice training course for active duty Dental officers. It was also a "first" when Dental officers on inactive duty were authorized a quota for attendance. Group active duty for training orders were issued to the Reservists attending the course. It is anticipated that this course will be the forerunner of many courses to come wherein Reserve Dental officers on inactive duty can participate in the latest professional advances in dentistry.

CDR Mazzarella Presents Paper. CDR M. A. Mazzarella DC USN, Administrative Command, NTC, Great Lakes, Ill., recently presented a paper—Studies on Oral Veillonellae—before the Chicago Sectiom of the International Association for Dental Research.

RESERVE SECTION

Letters to the Bureau

This section, a new presentation for the Medical News Letter, was conceived as a means of providing valuable information to interested Naval Reservists and field activities throughout the Naval Establishment and the Naval Reserve program. Correspondence received often poses interesting questions and the information furnished will not only assist the inquirers, but others who may have similar problems. Limitation of space may not permit publication of letters in their entirety.

Retirement Credit for Attending Meetings

". . . Our 1960 Annual Meeting is scheduled for 15 - 20 May in Los Angeles. The content of the program will be . . . similar to the content of the two meetings described in the publications mentioned. . . .

I would appreciate (learning) . . . whether (such) a meeting . . . or particular sessions which are part of it, might be approved for retirement point credits for Reservists . . . and the procedure necessary to gain such approval.

The final arrangements for our coming program will be complete enough to be sent to you for approval by about the first of February 1960. . . ." - J. G.

The enclosed agenda for your annual meeting does not appear to meet requirements for Naval Reserve credit since your program sessions do not show their duration. A creditable session or sessions must be of at least two hours to earn one retirement credit for the day. There must be a Military Section so designated on your program and the lecturers should in the majority be of the military services, active or inactive, and so identified on the program. This in no way precludes the occasional utilization of civilian lecturers or instructors.

A letter from your association furnishing the program with the changes recommended should be submitted to this Bureau at an early date in order that a suitable endorsement may be prepared for forwarding to the Chief of Naval Personnel who exercises final authority for the approval and awarding of Reserve retirement point credits. If your program is approved, the commandant of the naval district where your meeting will be held will furnish a military representative to record and report those Naval Reservists in attendance. Early submission of your program to this Bureau will assure timely publicity of your meeting in Bureau and Navy Department publications.

Credit for Postgraduate Courses

"The question has arisen among some of our members who are Reserve officers in the U. S. Navy Department as to whether they would receive credit toward their study requirements for maintaining their Reserve officer status for the postgraduate courses they attend other than those listed by the Department of the Navy.

. . . members of our society are required to complete 150 hours of postgraduate study every three years to maintain membership. Our requirements are listed in the enclosed pamphlet . . . and the type courses acceptable are described in the enclosed booklet. . . ." C. E. N.

Credit in the form of retirement points or promotion points is given to Naval Reserve officers for professional non-military training under conditions which compare favorably to the requirements contained in the booklet submitted.

The Navy, however, has the additional requirement that creditable studies must also enhance the member's mobilization potential in the Naval Reserve. This requires that the individual be trained to the highest degree possible in his professional field, and also requires him to develop military proficiency.

The policy of the Department of the Navy is published in regulations which are distributed so that they are brought to the attention of Naval Reserve officers. Briefly, the policy is as follows:

a. Promotion point credit is granted for residency training. In this context, residency training contemplates formal instruction of semester-length periods and does not include short refresher courses.

b. Retirement point credit is granted to individuals who attend symposia or other training or lecture programs conducted under the auspices of the Armed Forces; (symposia must be sponsored by, and under the control of, the military and may be conducted in conjunction with professional or trade conventions. In this event, they must have received prior approval from the Chief, Bureau of Medicine and Surgery and the Chief of Naval Personnel.) Credit may be granted only when:

(1) An individual participates in his capacity as a Reservist and devotes his time and effort beyond that normally associated with his civilian occupation.

(2) Such activity is engaged in without remuneration other than pay to which he may be entitled as a member of a Reserve component.

(3) Such activity demonstrably improves the individual's fitness to perform the military duties to which he may reasonably be expected to be assigned upon mobilization or similarly improves the fitness of others by his supervisory responsibilities on such an occasion.

c. Both retirement points and promotion points are credited for completion of selected correspondence courses administered by the Bureau of

Medicine and Surgery and the Bureau of Naval Personnel. Retirement points and promotion points are credited on an individual basis to qualified officers, upon application by the officer concerned. This Bureau is pleased to accept applications for credit for any type of training, although, as you may readily appreciate, many such applications are not approved.

Our policy concerning credit for professional training is not intended to deprecate requirements of other organizations; rather, it is intended to motivate and qualify the military physician. Participation in Naval Reserve activities and in the activities of professional societies is not incompatible and, while our requirements for credit are consistent, they do not deny recognition of non-military professional activity.

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A. M. A. Annual Meeting

The American Medical Association annual meeting will be held in Miami Beach, Fla., 13 - 17 June 1960. One retirement point credit per day has been authorized for eligible inactive Naval Reserve Medical Corps officers attending the Section on Military Medicine to be conducted on 14, 15, and 16 June, provided they register with the military representative each day.

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PREVENTIVE MEDICINE

Pests or Pesticides

Americans are inclined to take for granted their natural resources, good health, and wholesome food as part of their heritage. Little thought is given to the constant battle taking place in the production of food and other resources and the protection of health from opposing natural forces—pests. Pesticides are the important weapons used against insects, diseases, nematodes, weeds, and rodents in this struggle.

It is difficult to realize that our forefathers suffered from famine, and that many deaths were caused by pests in those early days. The bubonic plague

in Europe and the great potato famine are notable examples; the former carried by fleas from rats, the latter attributed to a fungus called "late blight." As recently as 1874, grasshoppers caused damage so great in the Middle West that Congress called it a national disaster.

Despite the tremendous advances which have been made in pest control in the United States, pests still destroy much that man wants and needs. Some annual estimates of their destructiveness are:

Insects - 12% of total output; 14 billion board feet of sawtimber, or enough lumber to build 1-1/3 million houses.
Weeds - 4 billion dollars
Plant diseases - 3 billion dollars
Rats and Rodents - between 1 and 2 billion dollars

On modern farms today, cultural control, the use of resistant varieties, and biologic control methods are accepted normal agricultural practices. These methods cannot in all instances assure pest-free produce. Farmers find it necessary to use pesticides to produce marketable food.

The first Federal bill concerning manufacture, labeling, and interstate shipment of pesticides was introduced into Congress in 1908. This bill became law in 1910. The Federal Insecticide, Fungicide, and Rodenticide Act of 1947 requires manufacturers to prove that pesticides are effective; requires labeling to indicate the pests the formulation will control, the crops on which it can be used, how it must be applied, and warning or caution statements, if necessary, concerning the care to be taken in handling or using the material. The Miller Pesticide Residue Amendment to the Federal Food, Drug, and Cosmetic Act of 1938 was signed into law in 1954. This law establishes the procedures whereby the Food and Drug Administration may set a tolerance or maximum amount of residue of a chemical which may legally remain in or on a food crop when it enters interstate commerce. The established tolerance always has a sufficient margin of safety so that it is safe for human beings.

Not only have pesticides protected our food, feed, and fiber from pests, but they have contributed directly to our freedom from disease. Probably, the most dramatic accomplishment in public health in the last quarter of a century was the control of major epidemics of louseborne typhus in densely populated, heavily infested populations under wartime conditions. It was the judicious use of insecticidal powders that actually stopped the epidemics, although immunization was of value.

In their role as lifesavers, pesticides protect foods from contamination by disease-carrying flies and rodents, harmful worms, fungi, and bacteria which have for centuries caused many human diseases or rendered food unfit for human consumption. Even so, use of these chemicals has been the subject of vicious attacks from some individuals who claim pesticides are responsible for a variety of human ailments. Fortunately, this opinion is held by only a small minority of the public. Studies conducted by public health

officials have failed to substantiate the claims made by these people. In a paper presented at a CDC training session on Epidemiology and Control of Vector-Borne Diseases, the favorable record of the modern pesticide was emphasized as follows: "For many years, the mortality associated with acute poisoning by liquid and solid substances has been about one per 100,000. Over a period of 50 years, there has been a general improvement resulting in this present record. There was no change in mortality statistics associated with the tremendous increase which has occurred in the use of pesticides since World War II. It may be concluded, on the basis of several studies, that pesticides cause slightly less than 10% of cases of poisoning caused by solids and liquids in the United States."

Frequently, insecticides are accused of upsetting the balance of nature, when, in many instances, it would be more accurate to say they are used to suppress an organism already out of balance. Man's struggle to survive occasionally requires that wildlife move from its chosen environment and, less frequently, results in some casualties. Man is not indifferent to this situation and has spent large sums for refuge areas where wildlife is always protected. In addition, in the war against pests he tries to protect wildlife by establishing developmental and pest control practices which will not permanently impair its well being. Laws have been passed to protect wildlife. In administering these laws, man's needs are also respected.

In this connection, Walter W. Dykstra, U.S. Fish and Wildlife Service, has stated: "In its appraisal of the situation, the Fish and Wildlife Service recognizes that pest control is necessary for the production of food and the protection of health for man and domestic animals. Blanket condemnation of the use of pecticides is neither reasonable nor practical. Many of these materials can and are being used with little or no significant harmful effects on fish or wildlife. Their use in the suppression of destructive and disease bearing pests at times indirectly contributes to food, shelter, and health for wildlife as well as for man. Some of these materials are useful tools in wildlife management"

When the amount of insecticides used in the last 50 years is compared to losses, the impact on wildlife has not been great and certainly not disastrous.

Chemicals have found their proper place in agriculture and as a valuable tool in public health programs. They are needed by farmers, public health officials, conservationists, and others to preserve our way of life. (Abstract, Pests or Pesticides: Agricultural Research Service, U.S. Department of Agriculture release, 22 March 1960)

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Make a thorough inspection. Never forget to look at the back of a patient. Always look at the feet. Looking at a woman's legs has often saved her life.

Osler

Toxicity of Pesticides

Hazards from toxic chemicals in industry are assessed by discovering how the worker becomes exposed to them. The application of most pesticides as fine sprays or dusts has given rise to the assumption that the major route of entry of the toxic substance is through the respiratory tract. However, studies of concentrations in the air around operators and measurements of the amounts of pesticides falling on various parts of the body surface, compared with quantities held up on filters fitted to respirators, have left little doubt that the skin is the main site of contamination in a variety of outdoor application techniques.

Indoor application of pesticides in public health work usually involves water suspensions of wettable powders. Despite the closed environment, measurements have indicated that during the application of a typical DDT wettable powder, only 7.1 mg. per hour of spraying was inhaled, while 1,755 mg. fell in the same period on the skin of the face, head, neck, arms, and hands. A man spraying 4 hours out of an 8-hour day in an open-neck, short-sleeve shirt without a hat or gloves would receive a dose of 105 mg. /Kg. on his skin.

The handling of concentrates presents a much greater potential hazard to the careless worker. In work connected with the commercial spraying of orchards with parathion, only among the mixing plant personnel was there evidence of undue exposure represented by a significant fall in cholinesterase levels during the spraying season. Full-time and part-time applicators were not so affected. The danger from concentrates is illustrated by eight fatal cases of poisoning in Britain in men handling 50% DNOC (4, 6 dinitro-o cresol) diluted to 0.5-0.8% for application.

Aircraft spraying presents special hazards to flying crews. One study indicated a special type of hazard for the pilot. A splash in one eye by an anticholinesterase insecticide which has a direct miotic effect (e.g. TEPP—tetraethyl pyrophosphate) may produce more serious difficulties in judging distances than a bilateral miosis. Investigations during aerial spraying with malathion for outdoor mosquito control wherein the discharge rate was 0.46 lb. /acre from a height of 70 ft. showed that the atmospheric concentration was less than 0.1 mg. /M_3 outdoors or in buildings in the area. Total exposure of a man working outdoors during the spraying amounted to 3.5 mg. while he inhaled less than 0.2 mg. The observations mean that materials of a toxicity considerably greater than malathion could be safely applied this way over inhabited areas for insect control. The health of those living in areas of intensive air and ground application of pesticides in orchards and cotton fields has been carefully assessed and no evidence found that such people have undergone any significant exposure to the pesticides being used.

The evidence just summarized clearly points the way to correct methods for adequate protection of those applying pesticides. Gases, volatile materials,

or fine aerosols used in closed atmospheres obviously demand the use of a suitable respirator. However, under conditions in which by far the greatest quantities of pesticides are applied in agriculture or public health work, it is the skin that must be protected. In mixing and diluting concentrates, rubber gloves should be worn. The protection they give may not be absolute since some of the solvents—such as xylene used in concentrates—can penetrate rubber. Carelessly used, even the heaviest gloves will give only limited protection because the inner surfaces readily become contaminated if the technique of removing and replacing gloves during work is not good.

Cotton clothing affords an adequate protection for the skin against 5% wettable DDT (2, 2-bis-(p chlorophenyl)-1, 1, 1-trichloroethane) powder sprayed indoors; however, 0. 5% dieldrin applied in a malaria control program contaminated men wearing cotton clothing to the extent that they received a dose of 1. 8 mg. /Kg. each day. Regular washing of cotton protective clothing is recommended, although soap and water have failed to remove all of an insoluble material like dieldrin. However, an experiment has shown that no transfer to the skin followed the wearing of such washed clothes. Nevertheless, an occasional wash in gasoline which dissolves most of these materials was recommended.

Those applying pesticides indoors need protection for the head, shoulders, and face. A plastic gauze (20 x 20 mesh) allows good visibility, affords adequate protection for the face from droplets, does not get occluded, and is comfortable to wear. Summaries of safe handling of pesticides have been given by many people. Some authors give as many as 20 important points to be considered. Protection methods should be carefully studied before application of pesticides is undertaken. (J. M. Barnes, Toxicity of Pesticides: Bulletin of Hygiene, 34: 1205-1219, December 1959)

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Chemotherapy of Extrapulmonary Tuberculosis in Adults

The management of pulmonary tuberculosis varies considerably to meet problems of individual cases, but the following general principles of chemotherapy which are widely followed are also believed to apply to many forms of extrapulmonary tuberculosis.

1. Antibacterial chemotherapy is recommended for all patients with active tuberculous infection.

2. Chemotherapy should be intensive and uninterrupted. Most physicians—but not all—advise combined chemotherapy, using isoniazid with either PAS or streptomycin. When it is well tolerated, PAS is usually employed because it is easily administered. Some physicians prefer to use three drugs—isoniazid, PAS, and streptomycin—for more severe manifestations of tuberculosis. The usual dosage of isoniazid is 100 mg. three

times daily (3-5 mg. /Kg. body weight), but there is growing indication that larger doses are sometimes more beneficial. Larger doses require the administration of pyridoxine to minimize the risk of neurologic complications (peripheral neuritis). PAS is given in maximal tolerated doses, ordinarily 4 Gm. three times daily (150-200 mg. per kilo body weight). Daily administration of streptomycin—1. 0 Gm. (15-20 mg. per kilo body weight)—is ordinarily reserved for severe manifestations of tuberculosis; injections every second or third day appear adequate for many cases.

3. Chemotherapy is continued for a prolonged period—usually two years and at least one year—after the tuberculosis has become inactive as determined by x-ray, and bacteriologic and clinical diagnostic methods.

4. Surgical treatment for pulmonary tuberculosis, particularly pulmonary resection, is ordinarily delayed for at least several months. This long preliminary course of medical treatment sometimes obviates the need for surgery, usually diminishes the risk of tuberculous complications of surgery, and sometimes permits more conservative operations than would have been possible earlier in the course of the illness. At other times, lesions that appear to be inoperable improve substantially as a result of medical treatment and become operable. In some forms of extrapulmonary tuberculosis, it is probable that surgery—particularly the radical procedures—should be similarly delayed for several months after medical treatment is begun.

Skeletal Tuberculosis. When affected by tuberculosis, a weight-bearing joint is more likely to require surgical fixation than a non-weight-bearing joint. Peripheral joints heal more rapidly and completely than proximal joints. Joints of the spine are more difficult to treat than joints of the extremities.

Tuberculosis which involves only the synovial membrane is often completely reversible; functional cure is usually possible with chemotherapy. Early diagnosis of such a condition may require biopsy.

Fusion of tuberculous joints is best delayed until medical treatment has diminished soft tissue reaction, closed any draining sinuses present, and stabilized the pathologic process. It may be avoided altogether in many instances.

Tuberculous abscesses should be evacuated when possible to facilitate healing.

Tuberculous Lymphadenitis. Tuberculous lymph nodes often resolve rather slowly under treatment with specific drugs, but eventual healing is usually possible without surgery. Abscesses associated with tuberculous lymph nodes should be evacuated (aspirated) and occasionally resected. Acid-fast bacilli that are not typical M. tuberculosis are occasionally found to cause lymphadenitis. These organisms are usually not responsive to anti-tuberculosis drugs.

Genitourinary Tract Tuberculosis. Tuberculous cystitis responds promptly when the infection is recent and superficial. Despite early clearing of symptoms, prolonged treatment is essential for permanent results.

Renal tuberculosis demands prolonged medical treatment in all cases—for even longer periods than in the case of pulmonary disease—and results are frequently satisfactory, even without resection of seriously damaged kidneys. Opinion among surgeons is divided as to what constitutes an indication for nephrectomy.

Tuberculous epididymitis, seminal vesiculitis, and prostatitis respond slowly but definitely to adequate and prolonged chemotherapy.

Tuberculosis of the female genital tract frequently requires surgery in addition to chemotherapy, especially removal of the abscesses associated with tuberculous salpingitis. Tuberculosis of the endometrium is usually secondary to tuberculosis elsewhere in the genital tract, but appears to respond to medical treatment.

Miliary Tuberculosis and Tuberculous Meningitis. These forms of tuberculosis frequently may be treated successfully, especially when early intensive and prolonged therapy is administered. Isoniazid is considered the most important drug. Streptomycin is usually employed daily for a few weeks or months. There is growing evidence that adrenal corticosteroid hormones are beneficial. Intrathecal therapy is rarely used in treatment of tuberculous meningitis. (Chemotherapy of Extrapulmonary Tuberculosis in Adults: Statement of Committee on Therapy, American Trudeau Society, American Review of Respiratory Diseases, March 1960)

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Utilization of Sterile Males in Animal Population Control

The principle of population control through utilization of sexually sterile males has been demonstrated for insects by the successful eradication of the screwworm (Callitroga hominivorax) from the island of Curaçao. Similarly, satisfactory progress in the eradication program of this livestock pest in Florida and other southeastern states made possible closing of male screwworm production facilities of the U. S. Department of Agriculture for this purpose in November 1959.

Thus far, rearing and release of a dominant number of irradiated insects is the only method that has been employed. However, the sterile-male technique is not necessarily limited to insects. Theoretically, it can be applied to any animal. The procedure may have practical application in control of certain rodents, predators, or other undesirable wildlife, or for limiting the rate of increase of large game species in overpopulated areas.

This method of population control is based on the principle that the introduction of sexually sterile, but otherwise sexually vigorous males, and to a lesser extent, females into the natural population of a species, will have a greater influence in reducing the biotic potential of the population than elimination of the same number of individuals by destruction or removal.

Development of a chemical or other satisfactory method of producing sexual sterility that could be applied to natural populations would eliminate the necessity for rearing and releasing sterile insects.

The presence of two sterile males to nullify the reproductive capacity of one fertile male would have a great regulating effect. It is estimated that on this basis the population trend would be 1,000, 311, 180, 115, 88, 85, and 103, the low level being reached in the sixth generation. In support of this estimate, the eradication of the screwworm on the island of Curaçao was achieved by the fourth generation. (E. F. Knipling, Sterile-Male Method of Population Control: Science, 130: 902-904, 9 October 1959)

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Children's Diseases and Pets

Where there are children there are usually dogs, cats, parakeets, or some other pet. The intimacy with which children live with their pets is well-known to any parent.

In a study of a consecutive series of 300 families, it was found that 94. 8% of the children were intimately exposed to dogs and 90. 4% to cats. In those families there were 531 children above the age of one year; of those 15. 4% had been bitten at some time by a mammal and 2. 1% had been bitten more than once. During a period of 20 months, a total of 157 children had been bitten by various animals. The investigators point out that the bites alone represent an accident prevention problem. In addition, every time the bite of a pet is reported to a physician, both rabies and tetanus must be considered and a decision reached as to whether to administer serum or vaccine.

The infections which can be transmitted from animals to human beings may be divided into four groups—viral, bacterial, fungal, and protozoan. Viral diseases acquired from pets are probably more common than is realized; among these, are cat scratch fever, psittacosis, and encephalitis.

Cat scratch disease is generally believed to be caused by a virus which the cat harbors without evidence of illness and which apparently can be transmitted for weeks or even months. Psittacosis is a virus disease endemic in many kinds of birds and domestic fowl. In about 60% of the cases reported in this country the disease follows exposure to pet birds and in the other 40% is attributed to domestic fowl and wild birds. The encephalitic viruses, carried chiefly by birds, horses, and mules, are passed to human beings by ticks and mosquitoes and can be transmitted to domestic pets. It is possible that these infections may be transmitted to man and become a greater threat to children. The encephalomyocarditis viruses are commonly found in hamsters, guinea pigs, and occasionally in squirrels. Lymphocytic choriomeningitis is usually transmitted by rodents, but it has been reported that it may

also be acquired from dogs. Furthermore, it has been shown that a relation exists between canine distemper and a respiratory disease of human beings. It is suggested that the two may indeed be the same disease in different species. Such reports, together with discovery of mumps antibodies in dogs, suggest that viral zoonosology may be an important but neglected field.

In studies of bacterial infections, it has been established that the ubiquitous salmonella can be pet-borne. Cultures from the gastrointestinal tracts of healthy dogs have revealed presence of various salmonellae in a significant percentage. An epidemic of pet-borne salmonella from baby chicks given to children at Easter has been described. Contamination of food is probably the principle means by which pets transmit the salmonellae. Although rare in most parts of the country, brucellosis, anthrax, and tularemia can be transmitted to human beings by domestic pets.

No case of transmission of tuberculosis from a dog to a human being has ever been reported, but dogs and cats acquire the disease from close association with infected humans, thus they are at least a potential source of infection.

The relationship between fungus diseases and animals and man is not clear. Most of the systemic mycoses that sometimes cause illness in man also occur in animals, more often in horses, cattle, and swine than in dogs or other pets. Proved transmission is extremely rare. Microsporum canis or M. audouini are the most frequent causes of superficial fungus diseases in man; M. audouini will also infect animals. Pets can also transmit M. gypseum, Trichophyton mentagrophytes, and Tricophyton verrucosum. Kittens are frequently blamed as a cause of tinea corporis infection.

The ingestion of the larva of dog and cat ascarides produces in man a severe systemic disease known as visceral larva migrans. This usually occurs in children between the ages of 18 months and 3 years.

Dogs are surpassed only by rats and mice as sources of leptospirosis. Dog tapeworm has been acquired by human beings by swallowing an infected flea. The mange mite does not frequently invade the human skin; when it does, it survives for a few days, but in this period it causes severe dermatitis with intense itching. Fleas pass freely from animal to man and are a major cause of the papular urticaria in children.

Regarding allergies, little need be said beyond the fact that it is axiomatic that no child with allergic tendencies should have a pet with fur or feathers.

Perhaps the most common fault of the sentimentalist is to confuse animals with human beings in matters of feeling, ethics, and behavior. Touching as the love of a child for a pet may be, there seems to be no reason to let it become a source of disease. (C. C. Carson, Children's Diseases and Pets: Los Angeles County Health Index, 27 February and 5 March 1960)

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Epidemiology of Sleeping Sickness in East Africa

A study of sleeping sickness in Kenya was undertaken at the end of 1956 and early 1957, with extensive reference to literature and administration and medical records, and first-hand investigations of endemic areas in central and southern Nyanza, Kenya.

Sleeping sickness is confined to the Nyanza Province where Trypanosoma gambiense was introduced from Uganda in 1902 and spread rapidly along the shores of Lake Victoria as far as the German (now Tanganyika) border, along the southern shores of the Kavirondo Gulf, and up the Kuja and Migori Rivers. Severe depopulation resulted until, between 1909 and 1912, the epidemic was abruptly checked by the people moving away from close contact with the vector, Glossina palpalis, in its habitat along the lake shores and rivers. The break in man-fly contact was not sufficient to eliminate the disease and it persisted as a low endemic, spreading inland to the Nyando and Yala Rivers by 1915 and 1917.

In the late 1920's an epidemic of less severity flared up again along the lake shore from Samia to the Uyoma Peninsula, and on the Kuja River, but it was brought under control through a well organized campaign by the medical department.

Trypanosomiasis still was not eliminated. In 1943, infections began to appear in numbers on the Kuja River and an epidemic rapidly developed, rising to nearly 300 cases a year by 1948. In the absence of adequately planned control operations, the incidence persisted at a high level until 1954, by which time the disease had spread from an initial focus on the central Kuja to a widespread epidemic involving most of the main river and its tributaries.

Simultaneous epidemics developed on the Nyando River, focused on Kibigori with 287 cases in 1949 and 1950, and in Central Nyanza in the Kadimu and Alego locations with over 70 cases. The Nyando outbreak was dealt with by elimination of the whole G. palpalis population—an isolated one—by spraying the river and its tributaries with DDT. The Kadimu-Alego epidemic was equally effectively stopped by clearing all riparian habitat of G. palpalis throughout the infected area. In the meanwhile, a mild epidemic with 50 to 100 cases a year had moved down the Lake Victoria shores from Sakwa to Uyoma.

Today, T. gambiense trypanosomiasis is at a low endemic level in three parts of the Nyanza Province: on the Nyando River where 5 or 6 cases a year represent a residue of slowly developing infections incurred before Glossina was eradicated in 1953; on the Kuja River system, still an active location for transmission of infections which are now being incurred mainly on the headwaters and side streams; in the Sakwa Uyoma Peninsula where transmission of infections takes place at 4 or 5 discrete and circumscribed lake-shore foci.

A fourth area, Samia location adjoining the Uganda border, may have some T. gambiense. It certainly holds T. rhodesiense, transmitted by G. pallidipes, and is continuous with the similarly infected area in Uganda. This is a potentially dangerous situation which requires investigation of both the extent and nature of the problem and the means for its control.

The author discusses the epidemiology of T. gambiense in Nyanza, particularly the mechanism of the persistent endemic foci which have held the disease, sometimes at a very low incidence for periods up to 50 years, and from which periodic epidemics have arisen.

The discussion leads to the conclusion that the present period of very low endemicity offers a unique opportunity for complete eradication of T. gambiense from this part of Kenya. (K. R. S. Morris, Trans Roy Soc Trop Med Hyg, 54: 71-86, January 1960)

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Summer Influenza

Coxsackie virus identified as type B1 was found associated with an epidemic of an influenza-like disease occurring during the summer of 1958. The illness was characterized by fever, pharyngitis, headache, meningismus, and, in some cases, vomiting and abdominal pain. Occasionally, a fleeting morbilliform rash was observed. Children were mainly affected. Group B Coxsackie virus was isolated from stool samples and type B1 neutralizing antibody was present in high titers in convalescent-phase sera. (H. Wissler, E. Wiesmann: Schweiz Med Wschr, 89: 608-610, June 6, 1959)

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